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TITLE OF THESIS..THE DEVELOPMENT OF AN INSTRUMENT FOR THE ANALYSIS OF THE VISUAL ENVIRONMENT.....

UNIVERSITY...UNIVERSITY OF ALBERTA.....

DEGREE FOR WHICH THESIS WAS PRESENTED..M'Ed.....

YEAR THIS DEGREE GRANTED....FALL '1974.....

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THE DEVELOPMENT OF AN INSTRUMENT FOR THE ANALYSIS OF THE VISUAL ENVIRONMENT

by

© TREVOR D. DUCKETT

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH

IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE

OF MASTER OF EDUCATION

DEPARTMENT OF SECONDARY EDUCATION

EDMONTON, ALBERTA

FALL, 1974

THE UNIVERSITY OF ALBERTA

FACULTY OF GRADUATE STUDIES AND RESEARCH

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research, for acceptance, a thesis entitled, "The Development of an Instrument for the Analysis of the Visual Environment," submitted by Trevor D. Duckett in partial fulfilment of the requirements for the degree of Master of Education.

(Supervisor)

Date . October 30th . 1974 .

ABSTRACT

This study dealt with developing an instrument to record student attitudes to the urban environment. The purpose was threefold: to determine how writers in the field approached the problems of the city and to develop a framework from which to study these problems; to use this framework as a means of discovering student differences in experience and evaluation within a selected sample; to describe how these particular students analysed the problems of the environment and the extent to which their comments concurred with expert opinion.

Four approaches were considered to be viable means of studying the urban environment. These were: a visual approach, concerned with the aesthetic needs of people; a psychological approach, concerned with emotional reactions to the environment; a social approach, concerned with the interactions of people; a functional approach, concerned with the purpose of any particular aspect of the environment. These four approaches formed the framework for the development of a simple test designed to record student differences in their experience of the city. The test, which used twenty-four slide examples of the city environment, was used on high school samples of rural and urban students.

Results indicated that students were able to consider selected aspects of the environment in the fashion developed by the researcher. Some differences were noted and were thought to be largely due to three reasons: a difference in experience between rural and urban students; a lack of objectivity on the part of

students; students' prior experience and knowledge of certain aspects of the environment.

It was concluded that the approach provided a vehicle for students and teachers to study environmental problems. The test developed from the framework was considered an adequate means to reveal differences in perception of the environment and is felt to have possibilities for classroom utilization in the study of the urban environment.

ACKNOWLEDGEMENTS

The author wishes to acknowledge the help and encouragement given by his supervisor, Dr. R. N. MacGregor in the accomplishment of this thesis. His enthusiasm and valuable advice were considered vital factors in the development of the project.

The author also wishes to acknowledge the added support and encouragement given by his wife, Lynne, which aided the author in overcoming the disappointments and problems encountered in this study.

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CHAPTER I

THE PROBLEM

Introduction

The Western world is at present experiencing a trend that sees more and more people living in urban centres. This trend is no less noticeable in Canada than elsewhere. Indeed, the Economic Council of Canada has stated that the pace of urbanization here could be among the highest of the industrial nations.

> By 1980 eight of ten Canadians will be urban residents, and six out of ten will be concentrated in 29 metropolitan areas of 100,000 and over. Over the next decade the pace of urbanization in Canada will continue to be the highest among the major industrial countries of the World.[1]

Continuation of this trend would inevitably seem to bring with it a concentration of many of the environmental problems that exist in our cities today. The Economic Council of Canada describes these as follows:

> Shortages and an inadequacy of urban housing, traffic and transport problems, air and land pollution, a confused jumble of conflicting land uses, decaying neighbourhoods and monotonous suburbs, urban poverty and social disturbance, steadily rising property tax burdens and the frustrations of municipal administrations - these are familiar burdens to the average Canadian dweller today.[2]

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[1] Economic Council of Canada, Fourth Annual Review: The Canadian Economy From the 1960's to 1970's (Ottawa: Queen's Printer, 1967), p. 223.

[2] Ibid., p. 191.

However, it is not necessary to turn to the text book to discover these problems. Every town and city in Canada fosters these and one need not look too far in order to observe them as they exist. Many students have first hand experience of them to one degree or another.

Since one of the general purposes of an education system is to reconcile the young with the society in which they will live as adults, then these problems become a legitimate part of the school curriculum. The proliferation of urban centres has made the study of the city environment sufficiently timely to warrant its implementation, in broad terms, in the curricula of Canadian schools.[3] Indeed, the current Alberta curriculum guide for junior high school art is one that has isolated the environment as a unit of study, offering as its objectives the following:

> To encourage the student to consider the impact of various forces and media which shape our environment and to promote discussion on ways in which tomorrow's society might cope with problems which have developed within our present environment.[4]

As a possible follow-up to this, the Arts 10 program includes environmental study as a unit of the curriculum which is aimed at developing the student's awareness of:

> Relationship of buildings to environment.
> Relationship of exterior and interior of buildings.
> Emphasis on space.
> Sketches of surroundings.

---

[3]Project Canada West, Face of the City (Western Curriculum Project in Canada Series, June, 1971).

[4]Alberta Department of Education, Curriculum Guide for Junior High School Art (Edmonton, Alberta, 1971), p. 38.

Study of local environment.[5]

The objectives of the curriculum guides are necessarily broad to fit individual needs. Classroom teachers of art are faced with the particular problem of how to tackle the environment in order that it may be more intelligible to the students. The concerns of teachers focus on the determinants of the visual environment and the relationship that man holds with this environment. This study will attempt to describe these concerns, and will propose a mode of dealing with questions concerning the visual environment.

Statement of the Problem

The purpose of this study is three-fold. Firstly, the researcher has tried to determine how selected writers in the field have approached the problems of the urban environment. The question to be answered was:

What are the factors involved when man relates to and interprets his man-made environment, as indicated by research and related literature? From this, a framework for use in the second part of the study was developed.

In the second part, this framework was used to develop a means whereby response to the urban environment could be analyzed for differences in experience and evaluation. In order to test the validity of this framework in this regard it was decided to use a selection of students from different backgrounds, so as to determine whether there were any differences in the way that they perceived the city environment. The question generated by this consideration was:

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[5]Alberta Department of Education, Curriculum Guide for Senior High School Art (Edmonton, Alberta, 1971), p. 14.

Are there any significant differences in the ways that students from different backgrounds experience and evaluate the environment?

Finally, the study has focussed on the approach that these students themselves took when experiencing the city, and on the extent to which their approach concurred with expert opinion. Relevant questions were:

If any differences exist in the way that students experience the environment, to which factors may these be attributed?

Are students capable of perceiving the environment from the perspective of the experts?

Which of the four stated components has the greatest influence on the way in which students experience the urban environment?

The research for this study was conducted in three parts. Part I consists of a review of selected literature in the area of study. Part II describes the administration of a test, developed from the information derived in Part I, to determine student perceptions of the visual environment, and also an analysis of the test scores. Part III consists of a taped interview of 20% of the chosen population, randomly selected, in order to derive more specific information that may have been lost because of the structured nature of Part II's instrumentation.

Definition of Terms

1. The urban environment refers to all visual aspects of the city.
2. The visual environment in this study is limited to the urban, man-made environment.
3. The urban/man relationship refers to the behavioural factors involved

when man relates to and/or interprets the urban environment.

Support for the Study From Art Education Literature

Though not primarily built with aesthetic concerns in mind, cities are nevertheless a visual form and are experienced visually more than is realized.[6] The work of cultural anthropologists such as Hall[7] and Sommer[8] shows that aesthetic experiencing has a bearing on the psychological disposition of city residents, while Rudofsky[9] tells us that the visual form of a city may influence the way that a person behaves socially. The visual form of any aspect of the environment will almost certainly encourage or discourage our use of it for any particular designated purpose. It is for these reasons that the urban environment is included in the curriculum guidelines set for art educators in Alberta.[10]

This selection of the environment as an automonous field of study rather than as a source of ideas for art products is centred upon the relationship between the

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[6]Richard Dober, Environmental Design (New York: Van Nostrand Reinhold Co., 1969).

[7]Edward Hall, The Hidden Dimension (Garden City, New York: Doubleday, 1966).

[8]Robert Sommer, Personal Space - The Behavioural Basis of Design (Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1969).

[9]Bernard Rudofsky, Streets for People (Garden City, New York: Doubleday, 1969).

[10]Alberta Department of Education, Curriculum Guide for Senior High School Art (Edmonton, Alberta, 1971), p. 14.

visual environment and human behaviour. This relationship has been realized for some time. Feldman,[11] in his book, Becoming Human Through Art advocated that it ought to be a concern in the art room.

> We want them to understand that the physical community is a form of art organized, according to Corbusier, to facilitate four functions: living, working, recreation and circulation....Children must learn to see the connections between environmental spaces and the needs of the people who use them.[12]

Earlier than this, in 1961, McFee proposed to study the urban environment in terms of its aesthetic and utilitarian functions at the classroom level.

> There is also a need for an educated citizenry that insists that standards for city planning include the aesthetic as well as the utilitarian use of space.[13]

This statement is perhaps based on the conclusions achieved by the Owatonna project in 1933.[14] Here, the aim of the project was to create art activity in a small town based on the natural aesthetic interests of the community. There was a minimization of emphasis on individual creative activities and a tendency toward artistic activity based on the home, school and community.

Thus, art educators have for some time been aware that the study of the environment is a necessary component in the already bulging art curriculum. It is thought that an approach that is studio-orientated neglects to impart an awareness of

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[11]Edmund Feldman, Becoming Human Through Art (Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1970).

[12]Ibid., p. 70.

[13]June King McFee, Preparation For Art (San Francisco: Wadsworth Publishing Co., 1961), p. 172.

[14]Frederick Logan, Growth of Art in American Schools (New York: Harper & Brothers, 1955), pp. 185-191.

aesthetics in aspects of daily living. Diemert,[15] in her article, "Aesthetic Education for What?" relates that, if one judges its visual qualities, the North American environment owes little to the pressures exerted by art education programs.

For a long time, however, teachers in the arts have been reluctant to pursue the theme of city design, for one reason or another. McFee offers the following explanation:

> Others of us may be overwhelmed into inaction by the complexities presented or isolate ourselves by believing that our area of education or profession is not involved, that social problems belong to political scientists and sociologists but certainly not to individuals in the arts.[16]

These complexities referred to by McFee focus on the consequences of a city's visual form: that is, the effect of the elements of design on the physical and psychological behaviour of humans. In 1970 the Project Canada West team, based in Calgary, recognized this and began the development of a program that attempted to reconcile design principles with the behavioural needs of people. Their program, a multi-disciplinary approach, notes that though common elements are involved in the creation of paintings and cities, the viewer's relationship to the work is fundamentally different in each case. They indicate that in city design, there are objectives set by humans for their own physical well-being in addition to the objectives set to take care of aesthetic needs.

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[15] Helen Diemert, "Aesthetic Education for What?" School Arts, Vol. 71, No. 8, pp. 36-38.

[16] June King McFee, Preparation for Art (San Francisco: Wadsworth Publishing Co., 1961), p. 122.

The importance of the urban environment to art education is noted by the editors of Art Education, the leading periodical for North American art education. In October, 1970, they devoted an entire issue to the subject. The writers in that issue subscribed to a direct involvement of the arts in environmental education. Helen Pate Bain[17] called for a universal awareness so that all may share the responsibility of cleaning up the city. Carl Feiss[18] argued that artists should transfer their interests from canvas to the environment around them. Bruce Murray[19] posed an interesting scheme to encourage participation in the shaping of cities. He showed how the public could assess slides of the environment on a five point scale. These slides would then be projected onto a grid so that their visual elements could be analyzed. In this way, he believes that we would be able to determine those elements that people find desirable in their environment. In the final article, Paul Mott Jr.[20] described an experiment at Moses Brown School, Rhode Island where students participated in a program that included airport studies, 8 mm film making, garbage studies and housing studies. Each project attempted to relate the visual

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[17]Helen Pate Bain, "Education for Survival," Art Education, XXIII (October, 1970), pp. 14-15.

[18]Carl Feiss, "Art and the Wasteland," Art Education, XXIII (October, 1970), pp. 20-23.

[19]Bruce Murray, "Toward Real Public Involvement in Environmental Decision Making," Art Education, XXIII (October, 1970), pp. 30-32.

[20]Paul Mott Jr., "I'd Rather go to the Beach," Art Education, XXIII (October, 1970), pp. 56-59.

environment to human consequences.

In 1970, an educational group formed in Philadelphia for the purpose of promoting environmental education (GEE, Group for Environmental Education) published a booklet offering practical experiments at the classroom level.[21] They focussed attention on the visual elements of the city, noting that design takes on new proportions when human needs and comforts are involved.

McFee, in her booklet, A Book About Cities offers a practical aid to elementary school teachers. The booklet helps to show students how cities are formed, why they look as they do and the implications of the shape of the city on its people.

Developments in the 70's indicate an interest in the visual environment and its place in the art curriculum. The NAEA has included study sessions on the environment for its last two conferences, held in San Diego (1973) and Chicago (1974). However, though much is being done, there still remains a very real need on the part of art teachers for a conceptual framework upon which they can base a program of studies. This framework should encompass not only expert opinion but should also take account of how the urban environment has already influenced the students' experience and perception of it.

The immediate need for an analytical study in the area of the urban environment is perhaps best argued by Kevin Lynch, one of the pioneers for environmental study. He draws our attention to the daily capacity of the visual

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[21] Group for Environmental Education, Our Man-Made Environment, Book Seven (Philadelphia, 1970).

form of cities to change the behaviour of people.

> Our fears, however, rise from another quarter: the way in which the environment affects our lives through our immediate perception and daily use of it. The physical form of a city has a sensuous impact that profoundly conditions the lives of its people, and this is often ignored in the task of city-building. By attempting, in our imaginations, to make a world city habitable, we may discover policies that could harmonise the real metropolis.[22]

Limitations of the Study

1. This study was limited to grade XI and XII high school students in the Province of Alberta during the school year 1973-74.
2. The researcher is aware that the literature selected is not inclusive of all that is available. He is also aware that the conceptual framework thus developed is shaped by this selection and that indeed, the environment may contain more than the four major components that have been isolated in this study.
3. The testing procedures utilized by the researcher are elementary and thus, any results can only be indicative, rather than conclusive. It is recognized that the twenty-four slides selected for the testing of the framework may have biasses built in due to their subject matter and composition. For this reason, if the research were repeated using a different selection of slides the possibility of obtaining different results

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[22]Kevin Lynch, Scientific American, Cities (New York: Alfred A. Knopf, Inc., 1965), p. 200.

cannot be discounted.

Summary

This chapter has outlined the need for an environmental education, a need arising from the belief that the visual urban environment affects the behaviour of people. It has also related some of the work that has already been accomplished toward this end in the field of art education. Finally, the introduction has outlined the procedures to be carried out in this study on the urban environment.

Overview

Chapter II will consist of a review of the literature and related research selected by the researcher. A conceptual framework for an approach to the study of the environment will be drawn up.

Chapter III will outline the design of the study and set out the procedure used to collect the information and data from samples within selected high schools.

Chapter IV will set out the results of the test and attempt to make conclusions from these based on the questions tabulated in Chapter I.

Chapter V will state the implications for art educators and city designers (in a general way), and make suggestions for further research in this area.

CHAPTER II

REVIEW OF RELATED LITERATURE AND RESEARCH

Introduction

This chapter will present a review of the related literature and research that has provided the background for the establishment of a framework designed to record student evaluation of the urban environment.

This framework began from the following observation:

> A criticism is often levelled at the architect that he is only concerned with the creation of a beautiful visual product, thus neglecting some of the needs of people that must live with this product. If this criticism is valid, then art teachers may be condemned if they fail to impart to their students an awareness that human behaviour is involved in the study of the visual environment. Indeed, the determinants of any visual form have always been " a good deal more rigorous than the transient impulses of a sculptor."[23]

With respect to the urban environment, the researcher's experience has been that human behaviour as the determinant of the visual form is far too general a concept. Le Corbusier believed that this human behaviour centered around living, working, recreation and circulation, or if you will, the social and functional behaviour of people. A review of the literature shows that this is not inclusive of all of the perspectives that people use when relating to the urban

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[23] Edmund B. Feldman, Becoming Human Through Art (Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1970), p. 70.

environment. In order to interpret environmental problems in more precise terms it is suggested by the researcher that one should examine the city and its impact on four particular behavioural needs. These are: a) The Visual Component: a need for an aesthetically pleasing environment, b) The Psychological Component: a need for an environment conducive to building a positive self image, c) The Social Component: a need for an environment that promotes human interaction, d) The Functional Component: a need for an environment that caters to the practical requirements of people.

The following four sections will contain a justification for this framework and present the viewpoints of those authors that shaped its development.

The Visual Component

There are authors who have lent thought to the aesthetic pollution of the city environment (Bor,[24] Malt,[25] Logan,[26] Owings[27]). Their condemnation is centered on the lack of relationship between efficiency and visual sensitivity. The Industrial Revolution, (the beginning of the upward drive toward functional

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[24]Walter Bor, "A Question of Urban Identity," Planning and Architecture. (Editor, Dennis Sharp. London: Barrie and Rockcliff, 1967).

[25]Harold Lewis Malt, Furnishing the City (New York: McGraw Hill Book Co., 1970).

[26]Frederick Logan, "A Challenge to Art Education," Art Education, XXIII (October, 1970), p. 38-43.

[27]Nathaniel Owings, The American Aesthetic (New York: Harper and Row, 1969).

efficiency) may have been the start of the retrogressive movement toward visual decay.

> When we look at what has been done in town design in recent years, we must judge those achievements not only with an eye on mechanical efficiency but also with our senses attuned to the manner in which this efficiency has been achieved. In the sadder cases of town development, we must be aware of the price at which this efficiency has been bought.[28]

The visual component of urban design focuses on the aesthetic fabric that weaves together the essence or character of a city. Visual qualities are more than a simple element in a functional machine. They have an inherent right to be, quite apart from the functional impositions placed upon them. These qualities are justified because of the enjoyment that they evoke in the inhabitants and because it is they that are ultimately responsible for the pleasant or unpleasant visual image that any environment evokes.

The creation of this visual image is not merely a case of upgrading the discipline of architecture so that a proliferation of "aesthetically pleasing" buildings will emerge. It is concerned with the whole network of town and city design; the way that buildings relate to each other and the manner in which the space that meshes these buildings is organized.

> The visual significance of buildings may be destroyed by indifferent surroundings, and even a number of good buildings may be combined unsuccessfully, so that instead of enhancing each other they detract from

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[28] Kurt Rowland, Looking and Seeing Number 4: The Shape of Towns (London: Ginn and Co. Ltd., 1966), p. 139.

each other and minimize each other's stature.[29]

> One building standing alone in the countryside is experienced as a work of architecture, but bring half a dozen buildings together and an art other than architecture is made possible.[30]

One of the first writers to note the significance of the visual element of urban design was Cullen in his book, Townscape.[31] Cullen posits that a "good" visual environment will trigger a positive emotional reaction in the individual. He indicates that this occurs in three ways.

The first concerns optics, wherein the organism's most important property is serial vision. Cullen reminds us that the environment is perceived via motion. The observer who moves from A to B will experience many different visual phenomena which unfold consecutively to produce a cumulative emotional reaction. In this way the scenery of the city is revealed through a series of jerks or revelations. It is essential that each of these revelations be different in order to make the greatest cumulative impact.

This has two major implications for urban design, according to Cullen. If we are concerned with emotional arousal, then a long straight road will have little impact, as the view will be quite soon digested and become monotonous.

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[29]Kurt Rowland, Looking and Seeing Number 4: The Shape of Towns (London: Ginn and Co. Ltd., 1966), p. 116.

[30]Gordon Cullen, Townscape (London: The Architectural Press, 1961), p. 9.

[31]Ibid.

Greater emotional involvement will occur through contrast; through juxtaposition, the city will come alive. The second implication is that, in accordance with serial vision, the viewpoint at any given point will be divided into two elements; the existing view and the emerging view. Cullen views the linking of the two as a means to the integration of the whole of the urban environment. It is through the manipulation of the two that an emotional reaction can be sustained.

The second involves the sense of place. Cullen suggests that each urban space must create a sense of "hereness," which is complemented by the automatic creation of "thereness." Cullen maintains that this is important if the city is to become a plastic experience that constantly evokes emotional participation. The relationship between "hereness" and "thereness" must be manipulated in order that a sense of position is instilled in the observer . He suggests that this may be achieved by enclosure: for example, buildings may be used to block off a view. Often the sense of enclosure may be promoted through less obvious means, such as a line of trees, bollards, a pergola or even a wire stretched from one wall to another. Changes in level accentuate "hereness" and "thereness," as does the undulation of streets, which has the added effect of creating chiaroscuro.

Cullen reminds us that the relationship of "here" and "there" is a transitional one, as all urban space is related. He draws our attention to a variety of street floors in terms of their textures and patterns as means to establish this relationship. He maintains that, by neglecting such factors, elements of monotony and sameness tend to be developed in the city.

Finally, emotional reaction is triggered through content: that is, the

qualities, texture, scale, style, character and personality of the city fabric. The ways in which these are used will aid in establishing the uniqueness of the environment. Cullen is not a sentimentalist. He considers that many of the technical achievements of this century have not been exploited visually. Consider his views on outdoor publicity and advertizing.

> And yet of all things, this is the most characteristic, and potentially, the most valuable, contribution of the twentieth century to urban scenery. At night it has created a new landscape of a kind never before seen in history. Strange patterns hover in the sky, enormous signs relay the news, lights flash, stream and swoop, holding the man in the street spellbound, but leaving the planner, it would seem, unmoved.[32]

One writer that would subscribe to Cullen's views on advertizing is John B. Jackson.[33] Though he does not find the city aesthetically pleasing at present, he does feel that something of quality could be developed from the billboard and neon light-orientated environment.

A proposal for the renewal of the West End in London, England does appear to have adopted some of Cullen's recommendations. The designer, Kenneth Browne,[34] feels the need to provide a continuity in the environment rather than fragmentation. He is concerned with the character or image that any aspect of the

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[32]Gordon Cullen, Townscape (London: The Architectural Press, 1961), p. 151.

[33]John B. Jackson, "Other Directed Houses," Landscape, Vol. 6, No. 2, 1958, pp. 29-35.

[34]Kenneth Browne, West End: Renewal of a Metropolitan Centre (London: The Architectural Press, 1971).

city has. His plan for the renewal of Trafalgar Square is particularly pertinent to Cullen's ideas. The building of shops and underground pubs will, he feels, accentuate the publicness of the square. So that the square is amalgamated into the environment rather than being isolated as at present, he calls for the closing of the traffic routes on the east and west. Those on the north and south would be sunk to establish a visual link. He indicates that entrances to the square from the arcades and pubs should be attended to, so that dramatic viewpoints of the square may be established.

In summing up Browne's proposals for other areas of the West End, his most important considerations are: a) attention to the character of a zone; b) attention to scale; c) consideration of the sense of place (for example, one ought to feel a definite sense of entrance and exit to a district such as Soho); d) attention to views: that is, river views or views of monuments or buildings, such as Eros in Piccadilly or Nelson's Column in Trafalgar Square.

In any discussion of the aesthetics of the modern city, city furnishings must be mentioned. One writer that has given special attention to this is Harold Malt in his book, Furnishing the City.[35] He includes a list of street furnishings such as: lamp standards, benches, sculpture, telephone kiosks and particularly, road signs. Malt, together with writers such as Lawrence Halprin feels that attention to the furnishings of the city is as important in aesthetic consideration as the design of the buildings. He bases this on the fact that the city is designed around

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[35]Harold Lewis Malt, Furnishing the City (New York: McGraw-Hill Book Co., 1970).

movements, which furnishings not only identify but enrich. This preoccupation with signs and symbols is quite valid, it would appear. A 1967 study made for Cincinnati's downtown area[36] listed 300 pedestrian signals; 1000 traffic-regulation signs; 2000 parking regulation signs; 935 light fixtures; 250 traffic signals; and 70 emergency vehicle signs. Fixtures such as garbage cans, mail boxes, fire-hydrants, benches and phone boxes were not counted.

Malt's concern is the visual pollution that the proliferation of signs has produced. However, in the modern city where the movement of traffic is important, he also attends to the efficiency of these signs in their ability to be "read." He reminds us of Gestalt perceptual organizations and the part that they play in the legibility of the environment, and concludes that not only do many signs pollute the city, they are also non-functional.

The concerns of Kurt Rowland[37] are centered on a visual environment that complements the materials and technology of the twentieth century. He maintains that cities have always been built in accordance with the needs and materials available at the time. In this way an artistic solution has been achieved that is beneficial to city dwellers in that it has added to the richness of people's lives. He continues by relating the downfall of this mode of town design, blaming the Industrial Revolution for establishing a philosophy wherein the march of progress

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[36]Harold Lewis Malt, Furnishing the City (New York: McGraw-Hill Book Co., 1970), p. 34.

[37]Kurt Rowland, Looking and Seeing Number 4: The Shape of Towns (Ginn and Co. Ltd., 1966).

was considered incompatible with a need for visual identity.

> The planning of the town had to give way to the needs of the moment. If industrial installation encroached on the landscape, if it disfigured the face of the town, it was excused on the grounds of expediency, if back-to-back housing created insanitary conditions, well, human beings simply had to put up with them, they were considered an unavoidable by-product of progress.[38]

Many of the writers mentioned as protagonists of the visual element of city design note the importance of uniqueness or image in any environment, a uniqueness which often owes its existence to site selection. There are authors who feel that the relationship of man-made environment to the natural is of paramount importance in achieving this visual image (Goldfinger 1969,[39] Rudofsky 1964[40]).

Nathaniel Owings[41] cites the example of San Francisco, describing it as the result of the development of the natural aesthetic. He concludes that the man-made form of the city is, in fact, ugly. It is only the superb natural surroundings that offer an identity to it. For this reason, he pleads for the consideration of natural landscape in any building proposition. Rather than

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[38]Kurt Rowland, Looking and Seeing Number 4: The Shape of Towns (London: Ginn and Co. Ltd., 1966). p. 84.

[39]Myron Goldfinger, Villages in the Sun (New York: Praeger Publishers, 1969).

[40]Bernard Rudofsky, Architecture Without Architects (Garden City, New York: Connecticut Printers Inc., 1964).

[41]Nathaniel Owings, The American Aesthetic (New York: Harper and Row, 1969).

exploiting the landscape, we ought to make attempts to enhance its beauty.

Those who expound on visual identity as the major consideration of urban design do not eliminate the functional element. They propose a balance of the two.

The Psychological Component

Implications of the environment for the psychological aspects of human behaviour are best put forward in the work of Edward T. Hall[42] and Robert Sommer.[43] They are both involved in the science of "proxemics," a term coined by Hall to describe the structuring of environment by drawing up physical or psychological boundaries that vary from situation to situation. This boundary is referred to as personal space, defined by Sommer as, "an area with invisible boundaries surrounding a person's body, into which intruders may not come."[44]

Both of these writers decry the utilitarian aspects of the environment and feel that more importance ought to be attached to the nature of people's activities and their peculiar needs.

> Architecture may be beautiful, but it should be more than that; it must enclose space in which certain activities can take place comfortably and efficiently.[45]

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[42]Edward T. Hall, The Hidden Dimension (Garden City, New York: Doubleday, 1966).

[43]Robert Sommer, Personal Space (Englewood Cliffs, New Jersey: Prentice-Hall, 1969).

[44]Ibid., p. 26.

[45]Ibid., pp.4-5.

Both writers feel it is imperative to know how different alternatives will affect people behaviour, before environmental decisions are made. Both have conducted studies that prove their point.

Sommer is particularly interested in the inhabitants of mental institutions. He was able to show how social discourse could be increased by placing seats and tables in a manner calculated to increase interaction rather than in response to the functional aspects of "through traffic" and cleaning. Though the utilitarian aspect is neglected, the very real needs of the patients for social discourse are not. Hall made observations of seating arrangements in airports and railway lounges and compared them with arrangements in restaurants. He found that one limits social behaviour, the other promotes it.

Linked to Hall's and Sommer's concept of personal space is crowding. Crowding means that density is such that regular intrusions of the individual's private space are inevitable.

Animal studies have shown that crowding does disrupt important social functions. During the period 1958-61 John Calhoun conducted a study to discover the effects of overcrowding and stress upon many generations of rats.[46] His experiment, later to be known as Calhoun's "behavioural sink," organized the rats in four pens linked together in a straight line. Resultant behaviour included disruptions of nest building, reproduction and social organization. Autopsied rats showed serious physiological effects also. It was found that most of the rats were

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[46] John Calhoun, "Population Density and Social Pathology" in Leonard Duhl (ed.), The Urban Condition (New York: Basic Books, Inc., 1963), pp. 33-43.

living in the middle two pens, because the end pens were claimed by the more dominant males. In those end pens "rat life" was relatively normal.

John Christian, an ethologist, posits that population is controlled by physiological mechanisms that respond to density.[47] This is to say, as density increases so does stress, which triggers an endocrine reaction leading in turn to the collapse of a population. He bases his hypothesis on his study of deer on James Island near Cambridge, Maryland, from 1955-60. In the study the deer were moved to James Island and given a free rein. As the island is limited in space and food provision, it could only accommodate a small number of the animals. On returning to the island at the conclusion of the five year period, Christian found that many of the deer had died. In summing up the James Island study, Christian stated that mortality resulted from shock following severe metabolic disturbance, probably as a result of prolonged adrenocortical hyperactivity. There was no evidence of infection or starvation, and most of the dead were does and fawns. It appeared that the deer, a normally passive animal, had under the stress of crowding become aggressive.

Animal studies indicate a link between crowding, stress and social disorder. More substantial findings were made by Paul Chombard de Lauwes in France, in 1959.[48] He was able to compute the number of square feet per person in various

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[47] John Christian, "Factors in Mass Mortality of a Herd of Sika Deer (Cervus nippon)," Chesapeake Science, Vol. 1, No. 2, (June 1960), pp. 79-95.

[48] Paul Chombard de Lauwes, Famille et Habitation (Paris: Editions du Centre National de la Recherche Scientific, 1959).

districts. He found that when the density rose above 8-10 square metres per person, social and physical pathologies doubled. There is nothing magical about 8-10 square metres, as it refers to a particular section of the French population at a particular moment in time. However, his results indicate a definite link between illness, crime and overcrowding.

In Harlem, New York, there are 232,000 people packed into three and one half square miles. Hall says that crowding may be solved in the "rat sinks" by enclosing portions so that rats do not interfere with each other. However, he also points out that caged animals very quickly become stupid. The "high-rise boxes" often used as solutions to housing problems are to Hall's thinking often more psychologically damaging than the dwellings that they replace.

In 1969 Ian McHarg wrote his book, Design with Nature[49] which has other important implications for the psychological determinants of urban living. His major contention is that cities ought to work with nature in an ecological fashion to produce both physical and social unity. He feels that the city should, as nearly as possible, be an eco-system; self-sustaining, self-regulating and self-perpetuating. During the sixties McHarg conducted two studies which reinforce the philosophies of Hall and Sommer.

His first study concluded that the concentration of Philadelphia's physical and mental diseases, social diseases and pollution were all centered in an area in the central core of the city where density was highest. He then had students

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[49] Ian McHarg, Design With Nature (Philadelphia: The Falcon Press, 1969).

draw up a map of the city that showed the areas where people were happy. These were the areas where there were playgrounds and trees in the street. In the areas where people were unhappy there was garbage in the streets and there were graffiti on walls. This map correlated closely with the environments of health and those of pathology.

McHarg's second study was centered on an area of New York between Park Avenue and the East River from 59th to 96th Street, where the density is 600 per acre. His conclusion was that there was more physical disease here than anywhere in New York. There was more alcoholism, drug addiction, suicide and other social diseases. Twenty percent of the sample interviewed were so mentally incapacitated as to be indistinguishable from mental patients. Sixty percent displayed symptoms little short of impairment, whilst only twenty percent could be said to be free of any symptoms of mental disease.

Many of McHarg's findings tie in closely with Calhoun's and Christian's results concerning overcrowding. However, McHarg also indicates that pollution is a further cause. He cites experiments conducted by the U.S. Navy to support this. Clean air is negatively ionized whilst polluted air is positively ionized. The Navy's experiments showed that positive ionization produces anxiety, tension, eroticism and low morale: whereas negative ionization contributes to a feeling of well-being.

It is perhaps overly dramatic to suggest that city populations are doomed to extinction as in the "deer studies." Sommer suggests that the effects of overcrowding and the like only become visible when the individual perceives others as humans that are invading his territory. Consider, he says, the rush

hour. He believes that people tolerate the invasion of personal space because they cocoon themselves out of the environment of the subway by the pretence of sleep, reading the newspaper or simply by daydreaming.

This "turning-off" is also referred to by Hall, who believes that North American cities are increasingly becoming socio-fugal and alienating to the extent that people can be robbed and murdered whilst others look on.

In considering the relationship between overcrowding and pathology one should take care about jumping to hasty conclusions. Michelson[50] points out that though a link exists between crowding and pathology, it is not a direct link. The relationship holds more meaning when a qualitative measure rather than a quantitative measure of density is used. He cites the example of Hong Kong, where pathology and associated traumas are fewer than American examples, even though density is higher.

> I have stressed continually that standard measures such as density per se are less keen and helpful in this context than other concepts that could potentially convey how the individual might experience the components of density. In addition, there is no underestimating the fact that the people of Hong Kong are not leading the lives of proper Philadelphians in their high density settings. They have evolved their own styles of life consistent with a unique culture, that are at least reasonably congruent with the exigencies of such high densities.[51]

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[50] William Michelson, Man and His Urban Environment: A Sociological Approach (Reading, Massachusetts: Addison-Wesley Publishing Co., 1970).

[51] Ibid., p. 155.

Another factor that perhaps influences the psychological security of city dwellers is the "legibility" of the city. Kevin Lynch, author of the book, The Image of the City, uses the term to denote the potential of the city to portray a strong image. Lynch would contend that the degree of legibility of the city environment is an important influence on the security of the city dweller. Dwellers in cities that have high imageability will have better self-concepts in terms of their relationship to the cityscape. Lynch managed to isolate five aspects of the city upon which to make judgments concerning its imageability: paths; edges; districts; nodes; and landmarks.

Examiners of the psychological dimension of urban living believe that man and environment participate in a process of molding each other. In an age where technology is so advanced that we are able to change the environment, the philosophical question becomes not what type of city do we want, but what type of organism do we want?[52]

These writers decry many of the utilitarian aspects of city development where human concerns are often neglected. Sociopetal activities such as walking cannot be undertaken because of the huge amounts of space that are given wholesale to the automobile.[53]

Hall explores this facet of urban living in The Hidden Dimension by

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[52]Edward T. Hall, The Hidden Dimension (Garden City, New York: Doubleday, 1966), Chapter 1.

[53]Barbara Ward, "The Menace of Urban Explosion," The Listener, Vol. 70, No. 1807 (London: British Broadcasting Corporation), pp. 785-787.

opining that European cities often have character because the physical aspects of many of the cities are based on decisions that have human concerns at heart.

> It is noteworthy that the little streets and alleys too narrow to accept most vehicles not only provide variety but are a constant reminder that Paris is for people.[54]

The Social Component

Life in any large city provides many opportunities for people to make contact with each other. Working, playing and shopping are all activities that require the city dweller to socialize with his fellow. The city is not merely a place where social interaction is possible, it is a place where it is necessary, its existence depending on a flourishing social life.

The social implications of the ways in which city space is organized are examined by Rudofsky in his book, Streets for People.[55] However, he feels that in the modern technological world music and human sound have been gradually replaced by the sound of motor traffic, sirens, and road machinery. This has slowly reduced the importance of the street as a social gathering place. Today, it is considered in its functional context alone: that is, how can one best travel from A to B. Hills, ponds and trees have been destroyed by the grid system, developed primarily as an easy means of buying and selling land. There is no notion that money and aesthetics could be combined in the manner of, for

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[54] Edward T. Hall, The Hidden Dimension (Garden City, New York: Doubleday, 1966), p. 164.

[55] Bernard Rudofsky, Streets for People (Garden City, New York: Doubleday, 1969).

example, 16th Century Venetian commercialism. Rudofsky believes that in North America, we have what we deserve from an ethic that sees the city as a commercial enterprise. He cites a number of telling historical examplars: for instance, the only time that the streets of New York were clean in 1818 was when money was offered for manure. The city collected the manure left by roaming animals and received $13,700.00, a considerable sum at the time.

Rudofsky draws particularly upon Italian settings to illustrate how the street may be used and is used for social behaviour. These include the porticoed or canopied street, which offers social advantages in the form of kinaesthetic pleasure, while in addition providing meeting places for social discourse that are sheltered from adverse weather conditions. They not only shelter the individual from winter storms but also form cool tunnels on hot days. To these ends, Bologna contains twenty miles of urban portici for its residents.

Rudofsky's major concern is with the use of the street. Some are not streets in the strictest sense of the word, for they do not make extensive provision for automobile travel. Genoa's Via Nuova, though twice as wide as other streets, is a pedestrian only street. In Italy, the authentic cafe is always a part of the street, spreading over much of the pavement. It is not merely a place to have coffee, but a place to socialize. Often cafes are expandable, occasionally closing off an entire street. Street awnings, outdoor decoration, pedestrian stairways are all described vividly by Rudofsky as means by which the street may be improved for facilitating social interaction.

Some attention is given to the names that Italians have for their streets. For example, vico, vicola, via, ramo, and rio indicate the physical nature of the

street, whether it is wide or narrow, canopied or staired. They reflect the immense variety of the streetscape and show that they are, to quote the title of Rudofsky's book, "streets for people." They are gathering places, designed primarily for experience at walking pace.

Roger Starr, writing in The Living End, would undoubtedly disagree with Rudofsky. He writes, concerning a recent trip to Rotterdam's Lijnbaan, a trafficless street,

> The Lijnbaan is attractive, colorful, cheeful; I had looked forward to shopping there, but discovered that for me, something was missing. After a while I concluded that I missed the tempo of traffic, the variety of shapes and colors of automobiles, trucks, taxicabs, motorcycles; instead of relief of having excaped from them, I found myself thinking that I was not in a city, but at a summer resort, a place in which, for all its charms I would not want to transact serious matters.[56]

This was the problem that worried shop keepers in Nottingham, England, when the centre of that city became pedestrian only.[57] They feared that the absence of taxis and private automobiles might atrophy the impulse for shopping there. Today, one year after the scheme's inauguration, informal impressions are that this does not appear to be the case.

Rudofsky posits that we only miss the motor car because we are unable to conceive life without it. We are, in a sense, addicts to automobile travel.

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[56] Roger Starr, The Living End (New York: Coward McCann, 1966), p. 194.

[57] Nottingham Topic, "When the Parking Had to Stop" Nottingham Topic, Volume 10, No. 109, June 1973, pp. 71-85.

> The devoted traffic addict, waiting for a green light on a wintry day, may get a full load of slush, spiked with salt and motor oil, thrown into his face. Conceivably, he will wipe it off with a grin; it is the fillup he needs to put him in the right mood for transacting serious matters.[58]

The crux of the matter was probably stated most appropriately as far back as 1909 by the sociologist, Jane Adams. "Society cares more for the products they manufacture than for the immemorial ability to affirm the charm of existence."[59]

The seemingly impossible coalition of the social needs of people and the functional aspect of automobiles is nevertheless attempted by Paul Ritter, in Planning for Man and Motor. He shows by referring to histories of accidents how the vehicle and man are diametrically opposed. One is slow, the other fast; one small, the other relatively large; one organic and one mechanical. He illustrates how provision for one is detrimental to the other. They provide mutual frustration. For example, straight roads, though good for traffic, are soul destroying and devoid of social expression for the pedestrian. Moreover, from the ecological standpoint, traffic and people form a disharmony, as carbon monoxide fumes are not conducive to a healthy people. In Los Angeles, says Ritter, three million vehicles burn five million gallons of fuel daily. It is not surprising that pollution is one of their greatest problems!

He believes that the private car and its subsequent effect on city design

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[58]Bernard Rudofsky, Streets for People (Garden City, New York: Doubleday, 1969), p. 342.

[59]Jane Adams, in Bernard Rudofsky's, Streets for People (Garden City, New York: Doubleday, 1969), p. 342.

inhibits social behaviour, concluding, on the basis of a study conducted in 1957, that households set out along paths rather than roadways enjoy benefits, sociologically speaking, to an extent that is quite decisive.[60] He concludes that they are safer, are more sociopetal, loneliness is rare and friendliness more apparent.

Ritter maintains that the car is most decisive in inhibiting social behaviour. Public transport and its necessary accessories such as bus stops, train stations and the like can be sources of sociopetal behaviour.

> If the positive aspects of communal travel are borne in mind then the design of stations and the means of conveyance themselves will develop according to more than the purely economic criteria now used.[61]

His conclusion calls for a segregation of the pedestrian and traffic so that each may have all of its needs served, and offers three solutions; horizontal segregation, vertical segregation and segregation by time. A horizontal division would imply that though both would be on the same level, each would have its own distinct causeway. Vertical segregation offers a solution in terms of a tiered system of causeways, whilst a segregation by time implies that the street would take on different uses according to the time of day, the day of the week, or the season of the year.

Whilst city planners and architects redevelop city centres and create paper

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[60] Paul Ritter, "Social Patterns and Housing Lay-Out" (Unpublished thesis, University of Nottingham, England, 1957).

[61] Paul Ritter, Planning for Man and Motor (New York: MacMillan Co., 1964).

utopias, one author believes that some of the so-called slum areas of cities may be able to offer much in terms of the social development of its inhabitants. Her name is Jane Jacobs, author of The Death and Life of Great American Cities. She cites the example of the North End of Boston, considered by planners as the worst slum area of that city. However, in 1959, figures showed that it had among the lowest disease, delinquency and infant mortality rates in the whole city.[62] The death rate was low, as was the TB death rate, statistical evidence that is not usually associated with the North End. Jacobs contrasts these figures with data from new developments such as Morningside Heights in New York City. Here, the figures are almost opposite to those of the slum area.

Jacobs would maintain that many of the low-income areas are places that have a bustling street life, and it is with this that she is most concerned. She advocates streets offering a variety of activity: if you will, multi-purpose streets. Only in this way are people able to expand their social development to its fullest extent. The child has immediate contact with the adult world, while the adults make extensive contact with each other in a variety of situations. Instead of breaking up these areas, Jacobs feels that we might learn something from them about the art of city planning.

> Cities are an immense laboratory of trial and error, failure and success in city building and city design. This is the laboratory in which city planning should have been learning and forming and testing its theories. Instead, the practitioners and teachers of

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[62] Jane Jacobs, The Death and Life of Great American Cities (New York: Random House Inc., 1961), p. 10.

> this discipline (if such it can be called) have ignored the study of success and failure in real life, have been incurious about the reasons for unexpected success, and are guided instead by principles derived from the behaviour and appearance of towns, suburbs, tuberculosis sanatoria, fairs, and imaginary dream cities - from anything but cities themselves.[63]

Closely allied with Jacobs in spirit is Theo Cosby, who criticizes the large monopolies that influence the shape of the environment. His two major works, City Sense and How to Play the Environment Game are examples of the idea that there ought to be more public influence on the shape and style of public building. He feels that today's styles are largely influenced by money, which in turn creates a monotonous environment of prefabrication. Cosby argues that planners ought to transfer to building style those elements that are most desirable to the social condition of man: human scale and neighbourliness.

These elements are lost when large building monopolies are allowed to redesign the city. Most crucially, the public has very little control or choice in matters of the environment.

> The effect of monopoly in any industry is to adjust prices to suit the convenience and the inefficiency of the producer. Equally serious is the continued growth in the scale at which business is required to be conducted, small firms are swallowed or undermined, and the customer's area of choice is constantly whittled away.[64]

Cosby decries an ethic that allows a government to spend two and a half

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[63] Jane Jacobs, The Death and Life of Great American Cities (New York: Random House Inc., 1961). p. 6.

[64] Theo Cosby, How to Play the Environment Game (Harmondsworth, England: Penguin Books Inc., 1973), p. 118.

million dollars on six hours in space or one half hour of fighting in Vietnam rather than on ten houses at $25,000 each. In Britain, the cost of developing an aircraft like the Concorde (970 million pounds) is equal to the building of two new cities. It is interesting to note the relative amounts expended on research and development in Britain. Annual government expenditure on military, space, chemical, engineering and automobile research is fifty times greater than research into city design.

> Expenditure on technologies with little social value continually increase. They are often admittedly harmful to the environment.[65]

Cosby calls for public awareness concerning environmental policies which would ultimately lead to public decision making on the shape of the environment.

Protagonists of the social perspective on design would in general not entirely reject a functional approach. They merely call for a redistribution of functional values that decide the shape of the environment.

The Functional Component

Function is the last chosen element of the man/urban relationship. This is probably the broadest and most encompassing of the components, as most of the selected writers have considered the function of the environment in one way or another. The difficulty would appear to lie within each writer's individual interpretation of what that function ought to be. In this category of the study, the functional aspect of urban design will refer to the efficiency with which

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[65] Cosby, op.cit., p. 97.

factors operate within the environment. Although such factors as time and money are pertinent elements, also included is the degree of efficacy that any environment has in fulfilling one designated role. Writers thus categorized might consider the pursuit of this role as most important in environmental design, even to the extent of minimizing any other role that the environment might have.

The most readily identifiable functionalist position is perhaps that of William H. Whyte, as expressed in his book, Cluster Development. His major thesis is that the function of the natural environment is that it should be enjoyed, and that the function of a house is that it is to be lived in. The problem, in a city environment that has all but eliminated the former function, is organizing both so that a complement is established. His solution is "cluster development" which simply means that the housing that would normally occupy for example ten acres should be much denser, so that larger areas of the natural environment may be left to be enjoyed by all. This solution is not based on aesthetic criteria (though these may enter into the problem at a later stage) but on the function of the environment.

Moreover, Whyte says that not only is more of the natural environment made more accessible to the occupants of cluster development, but also those homes become much more advantageous as an economic investment. Because of the clustering, building costs incurred in access roads, sewage pipes and the like are kept to a minimum. These benefits are naturally passed on to the house purchaser.

One writer who would agree with this proposal is Frederick

Logan.[66] He believes that in order to make the advantages of city living more amenable to all we need more low-cost housing similar to the type described above. In this way, all would have a share in the ownership of areas of natural landscape.

The predisposition for functional efficiency that some writers such as Kurt Rowland believe we have today, no doubt began with the Industrial Revolution in the late 1800's. However, the concept was probably reinforced somewhat by early twentieth century architects such as Garnier and Le Corbusier. These were brilliant men in their profession and it would appear that their effect on schools of architecture has withstood the test of time. Dora Wiebenson, writing on Garnier has made the following observation.

> The Cite Industrielle contains some elements, such as the separation of functions, the consideration of circulation, and the emphasis on industry, that were clearly to become features of modern urban planning.[67]

Urban planners of the same period as Garnier no doubt foresaw the rise in the rate of industrial growth and felt that this factor should predominate in any town plan. In doing so, these planners inevitably had to dismiss many of the aesthetic considerations that had characterized European architecture before the rise of industry. It would appear that they considered that some decline in

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[66] Frederick M. Logan, "A Challenge to Art Education" (Art Education, Vol. 23, No. 7, October, 1970), pp. 38-43.

[67] Dora Wiebenson, Tony Garnier: The Cite Industrielle (New York: George Braziller, 1969), p. 97.

aesthetic quality was inevitable if industrial expansion was to be integrated into the pattern of modern city growth.

> By the last quarter of the nineteenth century the study of the functional nature of city planning had shifted from France to Germany, where emphasis on sanitation and cleanliness tended to overshadow aesthetic considerations....With an eye to future expansion a strict zoning of various functions of the city and stringent building laws relating to interior courts and regulating the amount of site that would be used for building, were considered to be of maximum importance.[68]

It is the opinion of the researcher that writers viewing environmental problems from a functionalist standpoint may be identified by their emphasis on the readily observable physical needs of the modern city dweller. These needs would include such factors as a need for shelter, a need for work and a need for recreation, and their designs would attempt to accommodate these in the most efficient manner possible.

Summary of Related Literature and Research

This review has served the purpose of outlining some of the intricacies that are present when man interprets and relates to the urban environment, and it has suggested bases for categorizing environmental phenomena. It is therefore both possible and appropriate at this point to answer the first of the questions raised in the latter part of Chapter One. The question, restated, was:

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[68] George R. Collins and Christiane Craseman Collins, "The State of City Planning in Germany and Austria" in Dora Wiebenson's, Tony Garnier: The Cite Industrielle (New York: George Braziller, 1969), p. 15.

What are some of the factors involved when man relates to and interprets his man-made environment, as indicated by research and related literature?

This chapter has isolated four components in the man/urban relationship. These are: the aesthetic or visual; the psychological; the social and finally, the functional. This analysis is not exhaustive, but it does categorize those findings that are most readily identifiable, and perhaps also most readily applicable in terms of an educational program.

It should be emphasized here that each viewpoint does not necessarily exist in isolation from all of the others. Considerable overlap is apparent within each component. They are presented separately merely for the ease that this approach affords to anybody reviewing environmental problems for the first time: an approach that may very well be suited to the needs of high school art students.

CHAPTER III

DESIGN OF THE STUDY

This chapter deals with the selection of the samples for the study, the creation of a simple test derived from the factors isolated in Chapter Two, to record student evaluation of the environment, and the procedures employed in the conduct of this test.

The Setting for the Study

This study was carried out within the Edmonton Public School system, the County of Parkland School Division and the County of Lac St. Anne School Division during the school year 1973-74.

The Samples

High school students were used in the study to answer questions related to selected factors operating in the man/urban relationship. This decision was based on the premise that high school students would provide the researcher with an articulate element of the community. It was also thought that the high school student is still young enough to view the environment as an experiential phenomenon rather than a useable commodity. One hundred students from five high schools was considered a sufficient number to give an indication to the

researcher of the spectrum of opinions which might be in operation.

The five schools were not randomly selected, but chosen on the basis of the different student backgrounds that each school represented. In this way, a range was established, from rural to inner city. The schools chosen were: Onoway High School; Memorial Composite High School, Stony Plain; M. E. Lazerte Composite High School; Ross Sheppard Composite High School; and Victoria Composite High School.

The Testing Instrument

The purpose of the test was to record student impressions of the urban environment. Using the framework of visual, psychological, social and functional factors to describe the environment, four statements were drawn up that exemplified these approaches. These statements were:

a) This is pleasant to look at. (Visual component)

b) This place makes me feel good. (Psychological component)

c) I think that this is a pleasant place to meet people. (Social component)

d) This place serves a purpose well. (Functional component)

These prompted the students to assess their environment in a way comparable with the expert assessment quoted in Chapter Two of the study.

Twenty-four 35 mm colour slide examples of the city environment were selected for student evaluation, chosen on the basis of presenting a variety of situations for student reaction. Two cities: Edmonton, Alberta; and Victoria, British Columbia, provided the settings for all the slides. Residential,

commercial, recreational and linkage elements were considered appropriate sources for deriving examples. Illustrations of all slides used for this test are included in Chapter Four.

The Osgood Semantic Differential Test[69] was used as the basis for rating these slides. The Semantic Differential has a five point scale from -2 through zero to plus 2. In this study the numbers were replaced by the phrases: strongly disagree, disagree, neutral, agree and strongly agree. Students were asked to select one of these phrases as a reaction to each of the four statements previously quoted. In this way, the researcher would gain four reactions from each student for each slide. An example of the format of the test in included as Appendix II.

In order to acquire more specific information on student reaction to the slides and to environmental questions in general, the researcher randomly selected four students from each school for a short interview. Four of the response sheets were marked with a cross so as to provide a selecting mechanism. These interviews were tape-recorded for further use. In all, twenty students were interviewed, representing 20% of the chosen sample.

Distribution and Return of the Test

The testing was carried out in two stages. Three schools were visited in November, 1973, whilst the remaining two were visited in February, 1974.

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[69] Charles Osgood, G. Suci and P. Tannenbaum, The Measurement of Meaning (Urbana, Ill: University of Illinois Press, 1957).

Identical testing procedures were conducted in each school.

The response sheets were firstly handed out to the twenty students assigned by the school principal to the researcher, and a short instruction sheet was read out to the group. A copy of this instruction schedule may be found in Appendix I. The slides were then projected onto a screen and the students recorded their reactions. Each slide was shown for approximately one minute, following a reading of the title. After collecting the completed tests the researcher immediately proceeded to interview selected students in a private room provided by each school.

The results collected could not be subjected to extensive statistical treatment due to the nature of the test. However, the establishment of validity was not one of the purposes of the study. The response sheet was designed to gather information which might indicate directions for further exploration. Since the purpose was not to make wide statistical generalizations beyond the sample, it was decided to limit quantitative analysis of the data.

In order to answer the questions outlined in Chapter I the data collected were treated as follows:

Student reactions to the four statements relating to each slide item were added to produce a total score per item for each school. The mean score for each reaction was then calculated by dividing by twenty (since twenty was the number of students in each group). A comparison of mean scores was considered a realistic means of establishing any differences in student reaction, in view of the initial use of the Semantic Differential Test.

So that the differences between schools should be readily apparent the scores were tabulated for mean scores comparisons. The researcher was

interested both in the student scores for each component and also in the spread of the mean scores in relation to each particular item in the test, for in this way, it could be seen most easily where student differences occurred.

Interesting differences were those in which the numerical difference between two group means was at least one unit on the scale. This, incidentally ensures statistical significance in all cases.

In order to gain specific information with which to assess the factors contributing to student perception of the city environment, the interviews were content analyzed. Words and phrases used by the students to describe the environment were recorded by the researcher and categorized within the visual/psychological/social/functional framework. A numerical continuum could then be established for each person interviewed which would indicate the type of student/environment interaction taking place. This may be seen most easily by the following illustrations:

Phrases or words describing the design or aesthetic features of the environment noted on a numerical continuum.

no mention----------much mention

Phrases or words describing a psychological relationship with the environment noted on a numerical continuum.

no mention----------much mention

Phrases or words describing social behaviour noted on a numerical continuum.

no mention----------much mention

Phrases or words describing the function of the environment noted on a numerical continuum.

no mention----------much mention

Reliability and Validity of the Instruments

The Sementic Differential Test has been established as a fairly reliable means of assessing how man interprets his environment.[70] It is a way of gathering information, in the most objective fashion possible, in an area that is largely subjective. Helmstadter says of it:

> Thus, the technique appears to have a great deal of potential for studying the classical problems of individual differences, for noting subtle changes as a result of intervening historical, therapeutic, or educational experiences, for investigating cross-cultural communication problems, and for studying the general structure of the language.[71]

The rationale for using the Key Informants technique in addition to the testing procedure lies in the researcher's interest in the reasoning that accounted for the scores on the response sheet. It was thought that the interview would offer

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[70] Charles Osgood, G. Suci and P. Tannenbaum, The Measure of Meaning (Urbana, Ill: University of Illinois Press, 1957).

[71] G. C. Helmstadter, Research Concepts in Human Behaviour (New York: Meredith Corporation, 1970), p. 387.

a more informal approach to gathering further information concerning the student/environment relationship.

The interview was as structured as possible to provide interviewees with exactly the same stimulus upon which to base their responses. The researcher was seeking the students' ideas on environmental concerns, and responses to the questions differed. Because of this, it was considered valid to elaborate upon any exigencies that arose during the course of the interview.

CHAPTER IV

PRESENTATION AND INTERPRETATION OF THE TEST RESULTS

The first part of Chapter IV will be concerned with a statement of the results obtained from the administration of the test. In the second part, an analysis of these data will be presented. The questions posed in Chapter I (excluding question one) are restated together with data which can be interpreted to answer each question.

As it will be necessary to make frequent comparisons between schools and their relevant sets of students, the schools are coded. Using the rural-urban descriptive range, the schools are coded thus: Onoway (rural sample, 40 miles from urban centre) - Rural A; Stony Plain (semi-rural sample, 20 miles from urban centre) - Rural B; M. E. Lazerte (suburban fringe sample) - Urban A; Ross Sheppard (established urban residential sample) - Urban B; Victoria Composite (inner city sample) - Urban C.

In the interests of clarity, the rating scale used by the students is restated: strongly disagree -2, disagree - 1, neutral 0, agree 1, strongly agree 2.

Presentation of the Test Results

Slide #1. Crosswalk

	rural A	rural B	urban A	urban B	urban C
Visual	- 0.2	- 0.9	- 0.9	- 1.0	- 0.7
Psychological	- 0.8	- 0.8	- 1.1	- 1.2	- 0.8
Social	- 0.8	- 1.2	- 1.1	- 1.2	- 1.0
Functional	+ 1.1	+ 1.3	+ 1.1	+ 1.2	+ 0.9

Table 1. Student Response to Environmental Example #1.

It was felt that the spread of results did not reveal any significant differences in the ways that students responded to this example of the urban environment.

Students were negative to the crosswalk example with regard to its visual, psychological and social dimensions, whilst responding positively to its functional aspects.

Slide #2. Shopping Interior #1.

	rural A	rural B	urban A	urban B	urban C
Visual	+ 0.8	+ 1.0	+ 1.2	+ 1.0	+ 0.6
Psychological	+ 0.5	+ 0.5	+ 0.8	+ 0.5	+ 0.2
Social	+ 0.5	+ 0.9	+ 1.0	+ 0.5	+ 0.5
Functional	+ 1.2	+ 1.3	+ 1.0	+ 1.2	+ 0.9

Table 2. Student Response to Environmental Example #2.

It was felt that the spread of results did not reveal any significant differences in the ways that students responded to this example of the urban environment.

Students were positive to this shopping centre example with regard to its visual, psychological, social and functional dimensions.

Slide #3. Power Plant

	rural A	rural B	urban A	urban B	urban C
Visual	- 1.1	- 1.0	- 0.9	- 1.2	- 0.7
Psychological	- 1.0	- 1.1	- 1.0	- 0.8	- 0.7
Social	- 1.5	- 1.5	- 1.5	- 1.7	- 1.1
Functional	+ 1.4	+ 1.2	+ 0.8	+ 1.2	+ 0.8

Table 3. Student Response to Environmental Example #3.

It was felt that the spread of results did not reveal any significant differences in the ways that students responded to this example of the urban environment.

Students were negative to the power plant with regard to its visual, psychological and social dimensions whilst responding positively to its functional aspect.

Slide #4. Rest Area

	rural A	rural B	urban A	urban B	urban C
Visual	+ 0.6	- 0.8	- 0.4	- 0.7	- 0.3
Psychological	- 0.7	- 0.7	- 0.7	- 1.0	- 0.8
Social	+ 0.4	+ 0.4	- 0.2	0	- 0.1
Functional	+ 0.7	+ 0.2	- 0.5	+ 0.5	- 0.2

Table 4. Student Response to Environmental Example #4.

A difference was noted in the students visual response to this example, with Rural A responding positively, while the remainder responded negatively. It was

felt that there was no significant difference in the way that students responded with regard to the psychological and social dimensions. However, a difference was noted regarding the functional aspect, with rural samples reacting positively, while two urban samples reacted negatively.

Slide #5. Aerial View #1

	rural A	rural B	urban A	urban B	urban C
Visual	+ 0.9	+ 0.1	+ 0.7	+ 0.4	+ 0.2
Psychological	+ 0.5	- 0.2	+ 0.4	0	- 0.8
Social	- 0.3	- 0.4	+ 0.6	- 0.2	- 0.1
Functional	+ 0.9	+ 0.6	+ 0.6	+ 1.0	+ 0.2

Table 5 . Student Response to Environmental Example #5.

It was felt that there were no significant differences in the ways that students responded with regard to the visual and functional aspects. Some differences were noted regarding the students' responses to the social and psychological aspects, though no clear trends are discernible.

Slide #6. Shopping Interior #2.

	rural A	rural B	urban A	urban B	urban C
Visual	+ 1.2	+ 1.2	+ 1.3	+ 1.3	+ 0.7
Psychological	+ 0.8	+ 0.6	+ 1.3	+ 0.7	+ 0.6
Social	+ 0.8	+ 0.7	+ 1.2	+ 0.9	+ 0.6
Functional	+ 1.2	+ 1.0	+ 1.0	+ 0.9	+ 1.0

Table 6. Student Response to Environmental Example #6.

It was felt that the spread of results did not reveal any significant differences in the ways that students responded to this example of the urban environment.

Students were positive to this shopping interior example with regard to its visual, psychological, social and functional dimensions.

Slide #7. Living and Shopping Area

	rural A	rural B	urban A	urban B	urban C
Visual	+ 0.1	- 0.7	+ 0.6	- 0.1	- 0.1
Psychological	0.0	- 0.9	+ 0.5	- 0.6	- 0.1
Social	+ 0.5	+ 0.4	+ 1.3	+ 0.4	+ 0.7
Functional	+ 1.2	+ 0.7	+ 1.1	+ 1.1	+ 0.8

Table 7. Student Response to Environmental Example #7.

Some difference was noted regarding the students visual and psychological responses to this example of the urban environment, with Urban A students taking

the most positive stand of all the samples.

It was felt that there was no significant difference in the way that the students responded socially and functionally.

Slide #8. Waiting Room

	rural A	rural B	urban A	urban B	urban C
Visual	+0.7	+0.8	+0.8	+0.8	+0.6
Psychological	+0.2	+0.1	+0.1	+0.4	-0.2
Social	+0.9	+0.7	+0.2	+0.2	+0.5
Functional	+1.1	+1.3	+1.0	+1.0	+0.7

Table 8. Student Response to Environmental Example #8.

It was felt that there was no significant difference in the way that students responded to this example of the urban environment.

Students were positive to the waiting room example with regard to its visual, social and functional dimensions. Students were positive with reference to the psychological dimension,with the exception of one urban school. As all the results bordered the neutral area for this category it was felt that a negative response of -0.2 was not significant.

Slide #9. Street View, Victoria

	rural A	rural B	urban A	urban B	urban C
Visual	- 0.4	- 1.0	- 0.9	- 0.9	- 0.7
Psychological	- 0.5	- 1.0	- 1.0	- 0.9	- 0.8
Social	- 0.8	- 0.6	- 1.0	- 0.9	- 0.4
Functional	+ 1.0	+ 0.5	+ 0.2	+ 0.2	- 0.2

Table 9. Student Response to Environmental Example #9.

It was felt that there were no significant differences in the ways that students responded to this example of the urban environment apart from the functional dimension, wherein all samples except Urban C reacted positively.

Slide #10. Plaza

	rural A	rural B	urban A	urban B	urban C
Visual	0.0	- 0.4	- 0.5	- 0.5	- 0.1
Psychological	- 0.4	- 0.4	- 0.6	- 0.8	- 0.2
Social	0.0	+ 0.2	0.0	- 0.5	0.0
Functional	+ 0.8	- 0.1	- 0.2	- 0.3	+ 0.4

Table 10. Student Response to Environmental Example #10.

It was felt that there was no significant difference in the ways in which the students responded to this example of the urban environment regarding its visual, psychological and social dimensions. Some difference was noted in functional response, Rural A and Urban C samples reacting positively, while the remainder were negative.

Slide #11. Underpass

	rural A	rural B	urban A	urban B	urban C
Visual	+0.1	-0.5	+0.3	-0.4	+0.1
Psychological	-0.3	-0.6	-0.1	-0.1	-0.3
Social	-0.6	-0.7	-0.3	-0.7	-0.6
Functional	+1.0	+1.3	+1.3	+1.2	+1.2

Table 11. Student Response to Environmental Example #11.

It was felt that there was no significant difference in the ways that students responded to this example of the urban environment.

Students responded negatively concerning the psychological and social aspects and positively to the functional. There was some indecision concerning the visual dimension but the researcher attributes this to the indecisive visual image that this example evoked in the students.

Slide #12. Office Building

	rural A	rural B	urban A	urban B	urban C
Visual	+ 0.1	- 0.1	+ 0.8	0.0	0.0
Psychological	- 0.3	- 0.8	- 0.1	- 0.5	- 0.5
Social	+ 0.1	- 0.8	0.0	- 0.7	- 0.2
Functional	+ 1.1	+ 1.0	+ 1.1	+ 1.0	+ 0.9

Table 12. Student Response to Environmental Example #12.

It was felt that there was no significant difference in the way students responded to this example of the urban environment regarding its psychological

and functional dimensions. Differences in the visual and social aspects were felt to be minimal.

Generally, students regarded the visual dimensions in a neutral fashion and the functional, positively. Psychological and social dimensions were both considered negative in this example.

Slide #13. Sidewalk

	rural A	rural B	urban A	urban B	urban C
Visual	- 0.4	0.0	- 0.4	+ 0.5	+ 0.3
Psychological	- 0.2	- 0.2	- 0.5	+ 0.5	0.0
Social	- 0.1	+ 0.3	- 0.4	+ 0.9	+ 0.1
Functional	+ 0.6	+ 0.7	+ 0.6	+ 0.5	+ 0.6

Table 13. Student Response to Environmental Example #13.

It was felt that there was no significant difference in the ways that students responded to this example of the urban environment regarding the visual and functional aspects. Some differences were noted in psychological and social responses, but no pattern is discernible among these.

Slide #14. Town Houses

	rural A	rural B	urban A	urban B	urban C
Visual	+ 0.8	+ 0.5	- 0.5	+ 0.2	0.0
Psychological	+ 0.4	- 0.3	- 0.8	- 0.2	- 0.2
Social	+ 0.8	+ 0.6	- 0.1	+ 0.2	+ 0.2
Functional	+ 1.3	+ 1.3	+ 0.3	+ 1.3	+ 0.5

Table 14. Student Response to Environmental Example #14.

It was felt that there was no significant difference in the way that students responded regarding the social dimension. However, differences were noted in visual, psychological and functional responses to this example of the urban environment, with Urban A taking the most negative stand of all the samples.

Slide #15. Square #1

	rural A	rural B	urban A	urban B	urban C
Visual	+ 1.2	+ 1.3	+ 1.5	+ 1.3	+ 1.3
Psychological	+ 1.3	+ 0.9	+ 1.4	+ 1.0	+ 1.1
Social	+ 1.2	+ 1.4	+ 1.3	+ 1.1	+ 1.3
Functional	+ 1.2	+ 1.2	+ 1.3	+ 1.2	+ 1.2

Table 15. Student Response to Environmental Example #15.

It was felt that the spread of results did not reveal any significant differences in the way that students responded to this example of the urban environment.

Students were positive to this example in all aspects.

Slide #16. Square #2

	rural A	rural B	urban A	urban B	urban C
Visual	- 0.8	- 1.0	- 0.7	- 0.7	- 0.5
Psychological	- 0.6	- 1.0	- 0.6	- 0.9	- 0.5
Social	- 0.5	- 0.5	- 0.8	- 0.8	- 0.3
Functional	+ 0.2	- 0.3	- 0.6	- 0.9	0.0

Table 16. Student Response to Environmental Example #16.

The spread of results did not reveal any significant differences in the way that students responded to this example of the urban environment apart from the functional aspect. Students were negative to this Square example with regard to all dimensions, apart from one school, Rural A, that responded positively toward its functional dimension.

Slide #17. Aerial View #2

	rural A	rural B	urban A	urban B	urban C
Visual	+ 0.8	+ 0.6	- 0.5	+ 0.4	+ 0.4
Psychological	+ 0.2	- 0.2	- 0.2	- 0.3	- 0.3
Social	- 0.2	- 0.2	- 0.4	- 0.2	- 0.6
Functional	+ 0.7	+ 0.7	+ 0.6	+ 0.8	+ 0.3

Table 17. Student Response to Environmental Example #17.

There was no significant difference in the way that students responded to

this example of the urban environment with regard to its psychological, social and functional aspects.

A difference is noted concerning the visual dimension with Urban A responding negatively at the 0.5 level. All other schools were positive.

Slide #18. Walkway

	rural A	rural B	urban A	urban B	urban C
Visual	- 0.7	- 1.0	- 1.0	- 1.0	- 0.6
Psychological	- 0.8	- 0.8	- 1.0	- 0.9	- 0.7
Social	- 0.4	- 0.5	- 0.5	- 0.6	- 0.5
Functional	+ 0.8	+ 0.9	+ 0.7	+ 0.4	+ 0.4

Table 18. Student Response to Environmental Example #18.

There was no significant difference in the way that students responded to this example of the urban environment. Students were negative with regard to its visual, psychological and social dimensions whilst responding positively to the functional aspect.

Slide #19. Pedestrian Way

	rural A	rural B	urban A	urban B	urban C
Visual	+ 0.9	+ 0.3	+ 1.0	+ 0.5	+ 0.8
Psychological	+ 0.7	+ 0.1	+ 0.6	+ 0.4	+ 0.3
Social	+ 0.4	+ 0.4	+ 0.7	+ 0.7	+ 0.3
Functional	+ 1.0	+ 0.6	+ 1.0	+ 1.2	+ 0.6

Table 19. Student Response to Environmental Example #19.

There was no significatn difference in the way that students responded to this example of the urban environment. Students were positive to all aspects.

Slide #20. Shopping Interior #3

	rural A	rural B	urban A	urban B	urban C
Visual	+1.1	+0.9	+1.1	+0.7	+1.1
Psychological	+0.4	+0.3	+0.9	+0.2	+0.8
Social	+0.7	+0.8	+1.0	+0.6	+0.9
Functional	+1.1	+1.2	+1.0	+1.0	+1.0

Table 20. Student Response to Environmental Example #20.

There was no significant difference in the way that students responded to this example of the urban environment. Students were positive to all aspects.

Slide #21. Apartments

	rural A	rural B	urban A	urban B	urban C
Visual	- 0.4	- 0.8	- 0.1	- 0.8	- 0.3
Psychological	- 0.7	- 1.0	- 0.4	- 0.9	- 0.4
Social	- 0.1	- 0.3	+ 0.2	- 0.7	- 0.2
Functional	+ 1.1	+ 0.9	+ 0.9	+ 1.0	+ 0.5

Table 21. Student Response to Environmental Example #21.

There was no significant difference in the way that students responded to this example of the urban environment. Students were generally negative regarding the visual, psychological and social qualities, whilst responding positively toward the functional dimension.

Slide #22. Playground

	rural A	rural B	urban A	urban B	urban C
Visual	+0.7	+0.5	+0.3	+0.1	+0.7
Psychological	+0.3	+0.5	+0.1	+0.3	+0.5
Social	+0.8	+0.9	+0.4	+0.7	+0.7
Functional	+1.2	+1.0	+0.7	+0.9	+0.5

Table 22. Student Response to Environmental Example #22.

There was no significant difference in the way that students responded to this example of the urban environment. Students were positive to all aspects.

Slide #23. Shopping Area

	rural A	rural B	urban A	urban B	urban C
Visual	+ 0.8	+ 0.5	+ 0.9	+ 0.9	+ 0.9
Psychological	+ 0.3	- 0.1	+ 0.6	+ 0.7	+ 0.6
Social	+ 0.2	+ 0.5	+ 0.6	+ 0.7	+ 0.4
Functional	+ 0.9	+ 1.0	+ 0.8	+ 1.1	+ 0.9

Table 23. Student Response to Environmental Example #23.

There was no significant difference in the way that students responded to this example of the urban environment. Students were generally positive to all aspects.

Slide #24. Shopping Interior #4

	rural A	rural B	urban A	urban B	urban C
Visual	+ 1.3	+ 0.8	+ 0.9	+ 1.2	+ 0.9
Psychological	+ 1.1	+ 0.5	+ 0.3	+ 0.4	+ 0.1
Social	+ 0.8	+ 1.2	+ 0.9	+ 0.5	+ 0.6
Functional	+ 1.3	+ 1.1	+ 0.9	+ 1.2	+ 1.0

Table 24. Student Response to Environmental Example #24.

There was no significant difference in the way that students responded to this example of the urban environment regarding visual, social and functional response. A difference was noted in psychological response, with Rural A responding most positively, as compared with Urban C which was the least positive.

The preceding summary of the results has indicated where the major similarities and differences lie regarding the student response to the selected examples of the urban environment. In reviewing these results, it is therefore both possible and appropriate at this point to answer the second of the questions raised in the latter part of Chapter I. The question restated, was:

Are there any significant differences in the ways that students from different backgrounds experience and evaluate the urban environment?

It was found that identifiable differences in responses to the selected items occurred in ten examples. These were:

#4 - The Rest Area

- Difference in visual response between rural A, (0.6) and three other schools, rural B (-0.8), urban A (-0.4) and urban B (-0.7).
- Difference in functional responses between urban A (-0.5), and two other schools, rural A (0.7), and urban B (0.5).

#5 - Aerial View #1

- Difference in social response between rural B (-0.4) and urban A (0.6).
- Difference in psychological response between urban C (-0.8) and two other schools, rural A (0.5) and urban A (0.4).

#7 - Living and Shopping Area

- Difference in visual response between rural B (-0.7) and urban A (0.6).
- Difference in psychological response between urban A (0.5) and two other schools, urban B (-0.6) and rural B (-0.9).

#9 - Street View

- Difference in functional response between rural A (1.0) and urban C (-0.2).

#10 - Plaza

- Difference in functional response between rural A (0.8) and two other schools, urban A (-0.2) and urban B (-0.3).

#13 - Sidewalk

- Difference in psychological response between urban B (0.8) and three other schools, rural A (-0.2), rural B (-0.2) and urban A (-0.5).
- Difference in social response between urban B (0.9) and two other schools, rural A (-0.1) and urban A (-0.4).

#14 - Townhouses

- Difference in visual response between urban A (-0.5) and two other schools, rural A (0.8) and rural B (0.5).
- Difference in psychological response between urban A (-0.8) and rural A (0.4).
- Difference in functional response between urban A (0.3) and three other schools, rural A (1.3), rural B (1.3) and urban B (1.3).

#16 - Square #2

- Difference in functional response between rural A (0.2) and urban B (-0.9).

#17 - Aerial View #2

- Difference in visual response between urban A (-0.5) and two other schools, rural A (0.8) and rural B (0.6).

#24 - Shopping Interior #4

- Difference in psychological response between rural A (1.1) and urban C (0.1).

Interpretation of the Data

In the second part of this chapter, the final two questions posed in Chapter I will be restated, together with an interpretation of the data which will be utilized to answer these questions.

Question Three Restated

If any differences exist in the way that students experience the environment, to which factors may these be attributed?

The researcher believes that the following reasons may account for the differences in student experience and evaluation of the urban environment.

The Rest Area

The inclusion of the title of Rest Area may well have contributed to the difference in student response to this example. This is particularly pertinent within the functional context, for the rural students appeared capable of considering this particular example as performing a positive role in the urban environment. The title of Rest Area may, however, have positive associations to the rural student, whether it be in a rural or urban context. Urban B, on the other hand, responding at the -0.5 level, perhaps has no place for the role of a rest area in their concept of a city environment.

With reference to the visual responses, again rural A differed in response to the other schools. The researcher considers that in this case, students were not able to consider the visual qualities alone. The extreme rural student, with a positive attitude to the concept of rest area in general, transferred this attitude to

the visual dimension.

Aerial View #1 and #2

Differences in response to this example centre largely on differences between samples of rural students and urban students. Visually and psychologically, the rural student was positive towards these examples whilst the urban student was negative. Again, the researcher believes that students were not basing their decisions on one aspect alone. For example, in the case of the urban student, his psychological reaction to this particular aspect of the city may well reflect ideas and writing encountered in the "pop" field. As a result, a purely aesthetic response, though not impossible, becomes very unlikely. The rural student, who has probably never had to respond psychologically to this kind of visual image, might perhaps have a more objective viewpoint. Unaffected by the day to day problems of living in the city environment, it could well be that the rural student is more acceptive of the results of urban planning.

In the case of the difference in social response between urban A and rural B regarding Aerial View #1, the researcher believes that this may be accounted for by the urban student's personal experience of this particular part of the environment. He has thus already had positive reinforcement for his social assessment. His opinion is an informed one; his feelings are already formed about the example's capacity to be a pleasant place to meet people.

Living and Shopping Area

Differences in student evaluation of this example centre on the positive visual and psychological reaction of urban A, and the negative reactions to these aspects of rural B. It appears possible that psychological and visual considerations are being confused by the students. The student has a "good feeling" towards this example which he has transferred to the visual dimension. The researcher also believes that, in giving a title of Living and Shopping Area to the slide, he exerted an automatic influence on psychological response. Students were able to identify strongly with the environment, and when they were responding psychologically they were in fact stating their desire or lack of desire to live in the place.

Street View

The viewpoint presented was strange to two sets of students: that is, rural A (1.0) and urban C (-0.2). However, it may be seen from the results that these groups responded in a significantly different manner. The researcher puts forward the following tentative explanation for this difference:

It is always difficult to assess the functional efficiency of any part of the environment without actually experiencing that environment. Students asked to rate the efficiency of the pictured example were not likely to do so in a completely uninformed fashion. What was more likely, was that they would draw upon their own experiences of similar situations in order to make their evaluation. The rural student, with little experience of this milieu, is most likely to judge it in a positive way, as he is unable to see the drawbacks to this example of the urban

environment. The urban student, on the other hand, well experienced in the art of crossing streets, walking streets, shopping in streets and travelling in streets, is more likely to have a relatively informed opinion and so, bases his response on his good or bad experience of similar streets.

Plaza and Square #2

Again, the difference in response centres on a positive functional approach from the rural student and a negative functional approach from the urban student. As in the previous example, it would appear to be a case of the rural student having no means of accurately measuring the relative efficiency of the setting and therefore, giving a seemingly uninformed opinion. The urban student, on the other hand, recognizing the limitations of this environment, gives an assessment that is based on his own experience and knowledge of the place. Their response would indicate that they considered these examples of the environment either non-functional or disfunctional.

Sidewalk

Differences in response to this example were found in two components, the psychological and the social. Positive responses to both dimensions came from urban B, whilst negative responses were elicited by rural A, rural B and urban A.

It should be noted that urban A school is located at the edge of the city. The researcher suggests that there are visual qualities in this slide example that are more appealing to the urban student. For example, the presence of trees is an element that the rural student tends to take for granted.

Although visual responses were not found to be significantly different in this example, the researcher believes that the "rarity factor" is dominant. In previous examples such as the aerial views it was also found that students found it difficult to differentiate between the four components of the environment and were often confused in their response. In this particular example, urban B found the visual quality of trees so appealing that this factor influenced the manner in which they responded to other components.

Townhouses

Differences in response to this example are concerned with the visual, psychological and functional components. A negative response from urban A was noted in the visual and psychological components and this differed from the positive reactions of rural A and rural B. In the functional domain, again urban A differed in response to rural A and rural B and also urban B.

This example is particularly interesting in that the townhouses are located within the neighbourhood of urban A school. The researcher believes that this factor has contributed to the difference in student response. In terms of the functional component, it is possible that urban A is in a more knowledgeable position from which to make an assessment of the situation. On the other hand, visual and psychological responses indicate that they also find the place unpleasant to look at and moreover, have bad feelings toward the buildings. Responses from other students indicate that it is not unpleasant to look at. It could be that the personal feelings of the students living in close proximity to this example are hindering an objective assessment in terms of visual and functional qualities.

Shopping Interior #4

The difference in response to this example of the urban environment centres on a difference in psychological reaction between the extreme rural school (Rural A), and the extreme urban school (Urban C). There was a strong positive reaction from rural A and a weak positive reaction from urban C.

The researcher believes that the rural student is more likely to have good feelings about the shopping centre. He is in the position of being able to step back and give a more objective appraisal of the place as shopping centres do not form a part of his day to day routine. Urban C, on the other hand, where the shopping mall is a part of their immediate environment, may react differently. There are additional possible explanations for this. It could be that the urban student takes for granted this aspect of his environment, whilst the rural student views the shopping centre as being representative of the material advantages that the city offers. It is noted that this difference did not occur in the three other shopping interior examples. However, this may be explained by the fact that this example is located at some distance from urban C school, and these students may have judged it as being inconvenient in meeting their needs.

Question Four Restated

Are students capable of perceiving the environment from the perspective of the experts?

A review of the response sheets revealed that students were able to make positive and negative responses to the statements: This is pleasant to look at; This place makes me feel good; I think that this is a pleasant place to meet

people; This place serves a purpose well. The researcher believes that this is indicative of a student capability to view environmental problems in a manner consistent with that set out in the literature. Further, it is noted that all the interviews conducted with the students made reference to descriptions of the environment that could be categorized as visual, psychological, social or functional.

However, it should also be mentioned that students did at times find it difficult to make objective assessments of some of the components, as indicated in the student differences referred to in the previous question. The evidence suggests that students are for the most part likely to rely upon their own experiences in making environmental decisions.

Question Five Restated

Which of the four stated components has the greatest influence on the way in which students experience the urban environment?

This question was answered by an analysis of the student interviews. The more informal approach of the interview enabled students to express themselves in a way that was not possible in the structured nature of the response sheets. One reservation identified by the researcher on the interview method was that occasionally students tended either to have no views, or felt inhibited in what they wanted to say. The urban student generally had more opinions than the rural student.

Although many students had definite opinions on environmental problems it should be mentioned that these were rather limited and tended to reflect the views

of the experts who have published in the "pop" field. Thus, some of the opinions reflected in student statements were: skyscrapers are bad, industrial complexes have no place in the city, cities are overcrowded, cities are concrete and relatively ugly.

On the following page is a statement of the findings for all of the schools. Two observations are particularly noteworthy. Firstly, student mention of the function of the environment is low in all cases. Secondly, mention of a psychological relationship is particularly high. The analysis thus reveals the relative importance of those factors that presently hold the greatest significance in the relationship between the student and his urban environment.

Student psychological reaction could theoretically be high because the city has been planned with the psychological man/urban relationship in mind. However, the implication derived from Chapter II is that there is a noticeable lack of any consideration in terms of this dimension.

To sum up question five: indications are that the psychological component (and to some extent the visual) has the greatest influence on the way in which students experience the urban environment. This finding is supported by the student differences in reaction to the slide examples that were discussed in connection with question three.

Summary of Chapter Four

It was found that student differences in response to the selected examples of the urban environment occurred in ten cases. Although each example was by necessity treated individually, differences were found to centre on the following:

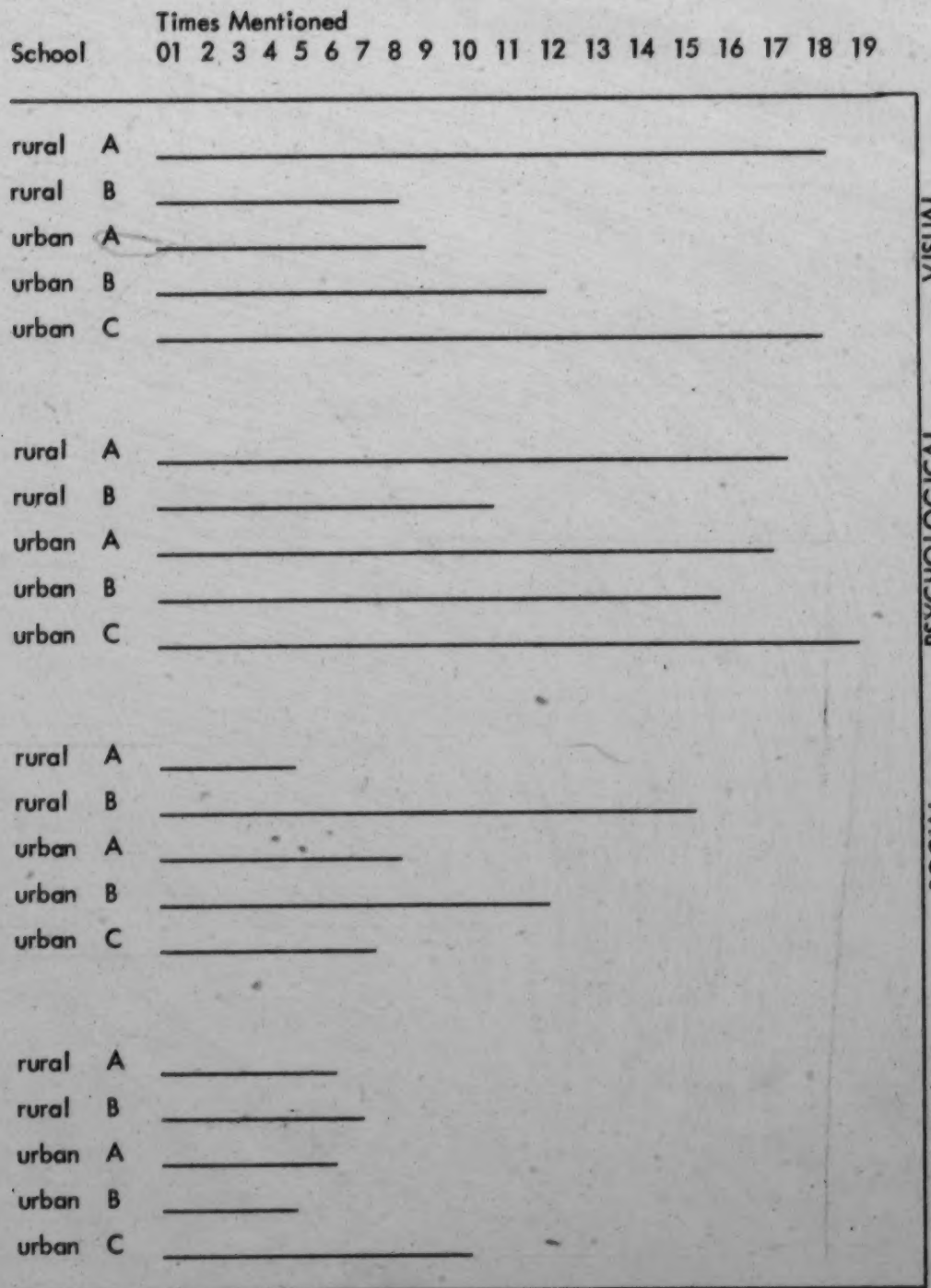

Table 25. Analysis of Student Interviews.

a) A difference in rural and urban students' concepts and experiences of the urban environment.

b) An inability on the part of students to treat the components in an objective fashion. If students felt strongly about one particular component, this feeling often hindered their assessment of other dimensions.

c) Some students had more experience of a place and thus, had an opinion that though not necessarily more accurate, did differ from that of other students.

CHAPTER V

SUMMARY OF RESULTS, CONCLUSIONS, IMPLICATIONS AND RECOMMENDATIONS FOR EDUCATIONAL PRACTICE

The purpose of this chapter is to restate the problem that was investigated; to summarize the results; to present the conclusions that arise from the study and to make recommendations for further research in the area of urban education.

Restatement of the Problem

The purpose of this study was: to determine how selected writers in the field have approached the problems of the urban environment; to develop a framework for analyzing these problems; to use this framework to determine whether there are any differences in the way that selected students from different backgrounds perceive the visual environment; to indicate which factors might be of importance in the way that students experience the city, and the extent to which their approach concurs with expert opinion.

Summary of the Results

A review of the literature in this field resulted in the formulation of four perspectives from which one could view the urban environment. These were: an aesthetic dimension (The Visual Component), one concerning a psychological

relationship between man and urbanity (The Psychological Component), one focussing on the social implications of the environment (The Social Component), and one concerning the function or job that any environment has to do (The Functional Component). A summary of the arguments presented by various writers ran as follows:

The aesthetic dimension is concerned with the physical impact of any part of the environment. Writers propounding this argument agree that the visual environment ought to be pleasing to the eye in order that it should provide the maximum visual enjoyment to the viewer. They agree that this has a great deal to do with the presentation of a forceful city image.

Writers concerned with the psychological dimension feel that the visual environment plays an important part in the psychological disposition of city dwellers. They agree that factors such as high densities, large buildings and air pollution may result in profound psychological illnesses: in sum, that the environment has psychological qualities that are conducive or adversive to a healthy population.

The social implications of city design are those aspects of the design that either foster or hinder social behaviour. They are concerned with the human need to meet other people within an environment that is both pleasant to look at and to be in. Within this broad topic are included factors such as roads designed to transport a person from one place to another, and the parts of the environment where people congregate.

The final quality isolated is the functional aspect. This is concerned with the role that a particular environment has to play in satisfying material needs and

the elements most suited to fulfilling that role.

As indicated in Chapter II, the conceptual framework that was developed from the review of selected writers was: Visual/Psychological/Social/Functional. It was stressed that this framework is not necessarily complete, as other categories might emerge from an exhaustive search of the literature.

In order that this framework might be assessed for curriculum potential, the researcher developed materials for classroom use and tested them upon a high school sample of one hundred urban and rural students. The purpose of the test was to reveal similarities and differences in students' perception of the urban environment.

Results show that students were able to consider selected aspects of the environment in the fashion developed by the researcher. It was found that student reaction to these parts of the visual environment was on the whole quite consistent. Differences that did exist were noted and thought to be largely due to three reasons: a difference in rural and urban students' concepts and experiences of the urban environment; an inability on the part of students to treat the four components in an objective fashion; and the fact that some students simply had more experience of some of the examples. The results obtained from the taped interviews indicated that students tended toward a psychological relationship with the urban environment.

Conclusions

The following conclusions were realized from this study:

1. That the experts selected for the study viewed the environment from

at least four perspectives: physical, psychological, social and functional.

2. That these criteria definitely exist in the slide examples provided by the researcher in this study, some in a positive sense and some in a negative sense.
3. That the framework of visual/psychological/social/functional is capable of indicating student differences in experience and evaluation of the urban environment.
4. That in the samples selected for study some differences were evident, related to their past experience of any place, to their life style (in this case, rural or urban) and to their ability or lack of ability to view any one component in isolation.
5. That the students selected were capable of viewing dimensions of the environment in a manner consistent with that cited in the literature.
6. That in the students selected, their relationship with the environment appears generally to be of a psychological nature, rather than a visual, social or functional one.

Implications

a) Implications for Education

It is clear to the researcher that any program of environmental study in the art room ought not merely to focus on visual design in its purest sense. The visual domain is so closely tied in with psychological, social and functional aspects as to be inseparable from them. Moreover, indications are that student

experience of the city is mostly of a psychological nature, which might be the ideal starting point for discussions on the implications of visual design.

If we are to accept what Feldman says concerning education and the environment, that children have to learn to see the connections between city space and human needs, then the framework presented forms one approach to pursuing this objective. It is by no means complete, but offers the possibility of being reduced or extended according to the individual needs of the teacher and his students.

In the art room one means of establishing the relationship between the visual environment and human behaviour is to present students with the problem of building a town on a small scale. This might be accomplished step by step, the teacher providing students with a series of building problems designed to include the four considerations: visual, psychological, social and functional. Ideally, students would create a visual solution to each problem that was a compromise of all four components. Camera work is another ideal medium whereby students are able to create a visual study of all four criteria at work.

In these terms, art education might be aimed at producing an educated citizenry that not only enjoys creating visual phenomena but also realizes the consequences of visual design in the world that they live in. Successful implementation could result in their contributing positively to their future well-being. These considerations make environmental education a justifiable part of all school curricula.

b) Implications for Town Design

Experts, by isolating factors apparent when man experiences the city, would agree that the behavioural consequences of urban design ought to be implemented in any aspect of city building. Responses to the slides indicated that in the examples selected there was not always a balance between visual, psychological, social and functional considerations. However, the review of literature in Chapter II revealed that all four considerations were important, and city design ought to be a compromise of these.

Suggestions for Further Study

1. A study is recommended using a similar cross section of slide examples in order to verify or refute the findings of this research. The obvious difficulty in repeating this study would be in choosing slide examples. Any person duplicating this study would need to take care in his selection, in order to ensure a degree of similarity with the slide examples utilized in this research.
2. A study is recommended that uses the analytical technique described, to test a more adequate sample of the population. Results derived from this would be more conclusive, since they would be obtained from a greater cross-section of subjects.
3. Greater knowledge of the man/urban relationship would be attained if the technique were used on more than one city environment. It is apparent that all urban centres are not the same, and interesting conclusions may be drawn from studies that use, for example, dense,

heavy environments, coastal centres, cities built on flat land, cities built on undulating terrain and so on. Results thus obtained might further verify the framework developed by this researcher.

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APPENDIX I

INSTRUCTIONS TO THE STUDENTS

This test has been made up in order to record some of your impressions of cities. You will be shown slides that represent different parts of a city. Whilst each one slide is being shown you will be asked whether you agree or disagree with four statements concerning that slide.

These statements are: -

(i) This is pleasant to look at.

(ii) This place makes me feel good.

(iii) I think that this is a pleasant place to meet people.

(iv) This place serves a purpose well.

You will be asked to record whether you are in strong agreement with the statement, in agreement, whether you disagree or whether you strongly disagree. The neutral column is to be used only if you have no feelings whatsoever concerning any one statement.

The first statement asks you to look at the slide with the visual qualities in mind. That is, do you like what you see or don't you like what you see.

The second statement refers to your psychological reaction to the place. That is, do you get good or bad feelings about what you are looking at.

The third statement refers to the social possibilities of the environment. That is, would you think that the place invites you to make contact with people or would it discourage you from doing so. It does not refer to its possibilities as a meeting place or rendez-vous.

The last statement refers to the function of the environment. Think of the major job that this environment does and decide whether this particular example would be used successfully for that purpose.

You will be given approximately one minute to view and respond to each slide.

APPENDIX II

AN EXAMPLE OF THE RESPONSE SHEET

AN EVALUATION OF THE ENVIRONMENT

Circle the most appropriate response.

Slide Description	strongly disagree	disagree	neutral	agree	strongly agree
1. Crosswalk					
a) This is pleasant to look at.	SD	D	N	A	SA
b) This place makes me feel good.	SD	D	N	A	SA
c) I think that this is a pleasant place to meet people.	SD	D	N	A	SA
d) This place serves a purpose well.	SD	D	N	A	SA
2. Shopping Interior (i)					
a) This is pleasant to look at.	SD	D	N	A	SA
b) This place makes me feel good.	SD	D	N	A	SA
c) I think that this is a pleasant place to meet people.	SD	D	N	A	SA
d) This place serves a purpose well.	SD	D	N	A	SA
3. Power Plant					
a) This is pleasant to look at.	SD	D	N	A	SA
b) This place makes me feel good.	SD	D	N	A	SA
c) I think that this is a pleasant place to meet people.	SD	D	N	A	SA
d) This place serves a purpose well.	SD	D	N	A	SA
4. Rest Area					
a) This is pleasant to look at.	SD	D	N	A	SA
b) This place makes me feel good.	SD	D	N	A	SA
c) I think that this is a pleasant place to meet people.	SD	D	N	A	SA
d) This place serves a purpose well.	SD	D	N	A	SA
5. Aerial View (i)					
a) This is pleasant to look at.	SD	D	N	A	SA
b) This place makes me feel good.	SD	D	N	A	SA
c) I think that this is a pleasant place to meet people.	SD	D	N	A	SA
d) This place serves a purpose well.	SD	D	N	A	SA

Slide Description	strongly disagree	disagree	neutral	agree	strongly agree
6. Shopping Interior (ii)					
a) This is pleasant to look at.	SD	D	N	A	SA
b) This place makes me feel good.	SD	D	N	A	SA
c) I think that this is a pleasant place to meet people.	SD	D	N	A	SA
d) This place serves a purpose well.	SD	D	N	A	SA
7. Living and Shopping Area					
a) This is pleasant to look at.	SD	D	N	A	SA
b) This place makes me feel good.	SD	D	N	A	SA
c) I think that this is a pleasant place to meet people.	SD	D	N	A	SA
d) This place serves a purpose well.	SD	D	N	A	SA
8. Waiting Room					
a) This is pleasant to look at.	SD	D	N	A	SA
b) This place makes me feel good.	SD	D	N	A	SA
c) I think that this is a pleasant place to meet people.	SD	D	N	A	SA
d) This place serves a purpose well.	SD	D	N	A	SA
9. Street View					
a) This is pleasant to look at.	SD	D	N	A	SA
b) This place makes me feel good.	SD	D	N	A	SA
c) I think that this is a pleasant place to meet people.	SD	D	N	A	SA
d) This place serves a purpose well.	SD	D	N	A	SA
10. Plaza					
a) This is pleasant to look at.	SD	D	N	A	SA
b) This place makes me feel good.	SD	D	N	A	SA
c) I think that this is a pleasant place to meet people.	SD	D	N	A	SA
d) This place serves a purpose well.	SD	D	N	A	SA
11. Underpass					
a) This is pleasant to look at.	SD	D	N	A	SA
b) This place makes me feel good.	SD	D	N	A	SA
c) I think that this is a pleasant place to meet people.	SD	D	N	A	SA
d) This place serves a purpose well.	SD	D	N	A	SA

Slide Description	strongly disagree	disagree	neutral	agree	strongly agree
12. Office Buildings					
a) This is pleasant to look at.	SD	D	N	A	SA
b) This place makes me feel good.	SD	D	N	A	SA
c) I think that this is a pleasant place to meet people.	SD	D	N	A	SA
d) This place serves a purpose well.	SD	D	N	A	SA
13. Sidewalk					
a) This is pleasant to look at.	SD	D	N	A	SA
b) This place makes me feel good.	SD	D	N	A	SA
c) I think that this is a pleasant place to meet people.	SD	D	N	A	SA
d) This place serves a purpose well.	SD	D	N	A	SA
14. Townhouses					
a) This is pleasant to look at.	SD	D	N	A	SA
b) This place makes me feel good.	SD	D	N	A	SA
c) I think that this is a pleasant place to meet people.	SD	D	N	A	SA
d) This place serves a purpose well.	SD	D	N	A	SA
15. Square (i)					
a) This is pleasant to look at.	SD	D	N	A	SA
b) This place makes me feel good.	SD	D	N	A	SA
c) I think that this is a pleasant place to meet people.	SD	D	N	A	SA
d) This place serves a purpose well.	SD	D	N	A	SA
16. Square (ii)					
a) This is pleasant to look at.	SD	D	N	A	SA
b) This place makes me feel good.	SD	D	N	A	SA
c) I think that this is a pleasant place to meet people.	SD	D	N	A	SA
d) This place serves a purpose well.	SD	D	N	A	SA
17. Aerial View (ii)					
a) This is pleasant to look at.	SD	D	N	A	SA
b) This place makes me feel good.	SD	D	N	A	SA
c) I think that this is a pleasant place to meet people.	SD	D	N	A	SA
d) This place serves a purpose well.	SD	D	N	A	SA

Slide Description	strongly disagree	disagree	neutral	agree	strongly agree
18. Walkway					
a) This is pleasant to look at.	SD	D	N	A	SA
b) This place makes me feel good.	SD	D	N	A	SA
c) I think that this is a pleasant place to meet people.	SD	D	N	A	SA
d) This place serves a purpose well.	SD	D	N	A	SA
19. Pedestrian Way					
a) This is pleasant to look at.	SD	D	N	A	SA
b) This place makes me feel good.	SD	D	N	A	SA
c) I think that this is a pleasant place to meet people.	SD	D	N	A	SA
d) This place serves a purpose well.	SD	D	N	A	SA
20. Shopping Interior (iii)					
a) This is pleasant to look at.	SD	D	N	A	SA
b) This place makes me feel good.	SD	D	N	A	SA
c) I think that this is a pleasant place to meet people.	SD	D	N	A	SA
d) This place serves a purpose well.	SD	D	N	A	SA
21. Apartments					
a) This is pleasant to look at.	SD	D	N	A	SA
b) This place makes me feel good.	SD	D	N	A	SA
c) I think that this is a pleasant place to meet people.	SD	D	N	A	SA
d) This place serves a purpose well.	SD	D	N	A	SA
22. Playground					
a) This is pleasant to look at.	SD	D	N	A	SA
b) This place makes me feel good.	SD	D	N	A	SA
c) I think that this is a pleasant place to meet people.	SD	D	N	A	SA
d) This place serves a purpose well.	SD	D	N	A	SA
23. Shopping Area					
a) This is pleasant to look at.	SD	D	N	A	SA
b) This place makes me feel good.	SD	D	N	A	SA
c) I think that this is a pleasant place to meet people.	SD	D	N	A	SA
d) This place serves a purpose well.	SD	D	N	A	SA

Slide Description	strongly disagree	disagree	neutral	agree	strongly agree
24. Shopping Interior (iv)					
a) This is pleasant to look at.	SD	D	N	A	SA
b) This place makes me feel good.	SD	D	N	A	SA
c) I think that this is a pleasant place to meet people.	SD	D	N	A	SA
d) This place serves a purpose well.	SD	D	N	A	SA